Infectious Mastitis
Mammary Microbial Dysbiosis
Day 1: Previously saw 2 of her Providers (e-mail)

- Mom: Developed w/ razor sharp pain/burning
  - Infant Dx w/ Thrush 5 wks ago—still on fluconazole (Diflucan)
  - Using monistat/probiotics
  - Tx 1 dose fluconazole (Diflucan)
  - Told Nipple Thrush Doesn’t Exist

Day 3-8: Sees another Provider (e-mail)

- Tx w/ Diflucan x 2 wks
- Refuses to Culture—will only tx for 2 wks
- On Diflucan 5d and slightly better
- But now w/ nipple cracking

Day 10-12: Urgent Care (e-mail)

- Relapses—entire breast tender to touch
- Refused to Culture
- Tx w/ Sulfamethoxazole-trimethoprim (Bactrim DS) x 7 d (worsens)
- Switched to dicloxacillan (Diclox) 500mg BID x 7d
Day 16-29

OFFICE VISIT: Cracks healing-much improved

ASSESSMENT: Mixed Ductal Infection/Early Mastitis

Plan and Outcome:
✓ Continue Diclox (dicloxacillan) BID for a total of 14 days
✓ Continue Diflucan 200mg until symptoms 100% resolved for 7 days
✓ Get larger cone/flange for pump

Day 21: Cracks recurred. Instructed to increase Diclox to QID
  • Larger flange helped

Day 23: Breast/Nipple very painful again.
  • Decrease Diclox to BID
  • Increase Diflucan to 400mg QD x 7 d & F/u.

Day 29: Seen again and Finally Significantly Improved. Completed diclox
  • Continue Diflucan—Continued for @ 7 wks total
Inflammation Differential

Non-Specific to Lactation

1. Ruptured breast cyst
2. Fat necrosis
3. Breast cancer
4. Costochondritis
5. Granulomatous Disease
6. Mastalgia-cyclic or non-cyclic
7. Subareolar Abscess-Duct Ectasia
8. Cat Scratch Disease-(breast mass)
9. Mondor’s Disease
Lactation Specific

1. Breast Fullness
2. Engorgement
3. Plugged Duct/Bleb
4. Non-Infectious Mastitis
5. Vasospasm
6. Infectious Mastitis
   - Acute
   - Recurrent
   - Abscessed
   - Sub-acute (Ductal)
Subacute or Subclinical Mastitis (Ductal Infections)

**Other Terms Used**
- Infections of the Ducts
- Ductal Candidiasis
- Moniliasis Breast
- Candidosis
- Deep Breast Pain

**Definition**
Deep, burning, aching, and/or radiating breast pain during, after or intermittently between feedings in the absence of redness or fever. Nipples may or may not be involved.
Subacute Findings

Maternal Evaluation

• Ductal vs. Nipple Infection?
• Nipple Pain and Breast Pain are intrinsically related
• Variations in Presentation
  ▪ Maternal or Infant Antibiotic tx
  ▪ Infant Candidal Infection
  ▪ History Maternal Nipple Trauma

Infant History and Evaluation

• Infant Candida Can Present:
  ▪ Oral or Dermatological
  ▪ Symptoms Include:
    ▪ Difficulty Latching
    ▪ Poor Breastfeeding
    ▪ Cranky or Colicky

Amir, 1996: P<0.05 for Postpartum Antibiotics 62% for Mastitis
Tanguay, 1994: Postpartum Antibiotics 52% vs 29% P< 0.03
Amir, 2004: P< 0.02 for Infant with Oral Thrush
Tanguay, 1994: 84% vs. 0% Oral or Diaper Candidiasis
Case Report Amir, 2004
BMJ Open 2013;3:e002351.doi:10.1136: Rate Ratio 2.3 (1.19 to 4.43) p=0.012
Prevention of Mastitis
The 10 Steps to Successful Breastfeeding

1. Have a written breastfeeding policy
2. Train all health care staff
3. Educate on Breastfeeding’s Benefits and Management
4. Skin-to-Skin at Birth and Beyond
5. Show mothers how to breastfeed and maintain lactation
6. Encourage Only Maternal Milk
7. Rooming-in—24 hours a day
8. Encourage Breastfeeding on Cue
9. Give no artificial teats or pacifiers to breastfeeding infants.
10. Establish and Refer Mothers to breastfeeding support groups
Treatment of Milk Stasis
(Engorgement, Plugged Ducts, Mastitis)

**ANY MILK STASIS**
1. Empty the Breast Frequently Without Restriction
2. Deep Latch
3. Pumping After Feeds with Correctly Sized Flange
4. Warm or Cold Compresses or Hot Shower
5. Rest, Eat, and Drink

**ENGORGEMENT ONLY**
- Cold Compresses or Cold Cabbage Leaves
- Warm Compresses Can be Tried after Cold
- Short Frequent Pumping on Low Suction
- Reverse Pressure Softening

**MASTITIS ONLY**
- Massage with oil—toward the nipple during feeds
- Also can Recline After Feeds and Gently Stroke Breast from Areola to Axilla
- Start on Affected Side with Chin Pointed Toward Affected Area

**PLUGGED DUCTS ONLY**
- Massage Lumps Especially During Feed
- Lecithin 1 Tb QD or 1200 mg TID or QID
- Check For Pressure on the Breast
- Start Feed on Affected Side with Chin Pointed Toward Affected Area
Reverse Pressure Softening

Press Gently and Firmly for 1-10 minutes
Supine Position Facilitates
Prescriptive Treatment
Acute and Subacute Mastitis

1. When to treat with antibiotics? Antifungals?

2. How long to treat with antibiotics? Antifungals?

Acute Mastitis

- Symptoms are severe or abscess suspected
- Nipple fissures are present
- Symptoms have not improved within 12-24 hours of effective breast drainage.
- Antibiotic coverage should include S. aureus (the primary pathogen)
- Optimal duration is 10-14 days (2 days after symptoms have resolved)
- MRSA is being seen
- Suspect Strep B if bilateral (also treat baby)
- Bilateral can also be non-Hodgkin’s lymphoma

(WHO, ABM, Lawrence, and/or ACOG Recommendations)
Subacute Treatment
Ductal Infections cause by candidiasis and/or bacteria

Bacterial
Empiric vs Culture based
- Sulfamethoxazole-trimethoprim (Bactrim DS)
- Minimum of 14 days
- Alternative: Levaquin (levofloxacin)
- Or based upon culture and sensitivity

Candida Suspected
- Diflucan (Fluconazole) 200mg
- 2 po day 1 then daily until symptoms are 100% resolved x 7d
- Minimum of 14 days
- May increase to 400 mg
- Alternative: Nizoral (Ketoconazole) 200mg-400mg
Laboratory investigations and Diagnostic procedures IF:

- No Antibiotic Response Within 2 Days
- Recurrent Mastitis
- Hospital-acquired Mastitis
- Allergies to Therapeutic Antibiotics
- Severe or Unusual Cases
- Subacute or Ductal Infection
  - High rates of false-negative cultures especially for candida

(WHO, ABM, Lawrence, and/or ACOG Recommendations)
Abscesses

**Diagnosis:**

Breast ultrasound

**Treatment:**

1. Drain by needle aspiration with or without US guidance
2. Serial needle aspirations may be required
3. Culture aspirated fluid or pus
4. Surgical drainage may be necessary for very large or multiple abscesses
5. After surgical drainage, continue breastfeeding on the affected breast (even if a drain is present, with the proviso that the infant’s mouth is not in direct contact with pus or infected tissue)
1. Antibiotics should follow drainage (Consider Resistant organisms)
Recurrent Mastitis

Culture milk for fungus, yeast and bacteria, culture maternal and infant oronasopharynx. Evaluate for other sources of re-infection such as nipple creams and pumping equipment. Evaluate maternal hygiene encourage hand washing before feeding or pumping.

Treat mother and child according to results and empirically based on exam. Treat nasal colonization with mupricin ointment. May also use antibacterial soaps. Consider culturing and treating all family members.

Consider low-dose antibiotics. Erythromycin 500 mg daily. Clindamycin and/or penicillin are other alternatives.

Assess and correct mechanical problems or trauma. Keep breast well drained. Treat oversupply. Consider pumping equipment, poor fitting bra’s or other clothing and spousal abuse as a potential source of trauma.

If reoccurrences unilateral consider weaning from affected breast.

May be potentially untreatable causes such as a ductal abnormality or these mothers may have lower levels of IgA, C3 and lactoferrin in their milk than other lactating mothers.

A trial of antioxidants vitamin E, vitamin A, and selenium may be warranted

Evaluate for underlying maternal conditions that may be associated with mastitis: anemia, poor nutrition, stress or fatigue, recurrent plugged ducts or breast mass.

Order a CBC. Do a thorough breast exam and order a Breast Ultrasound. Consider mammogram. Encourage rest and reduction of stress. Recommend regular exercise and prenatal vitamins.

Plugged ducts are treated with removal of mechanical causes and lecithin.

Examine both mother and child for yeast. Check mother for bacteria and Raynaud’s phenomenon. Ask about and look for eczema/dermatitis.

**Signs of Yeast found**
- Treat mother and child when symptoms of yeast are present
- Culture for bacteria and treat accordingly.
- If no response to initial treatment choice consider alternative anti-fungal

**Negative for Raynaud’s and/or eczema. Culture for both bacteria and yeast/fungus**
- If positive for Raynaud’s evaluate and treat any mechanical problems and
- Culture for both bacteria and yeast/fungus
- If no underlying etiology discovered then treat for idiopathic Raynaud’s
- May treat for bacteria empirically while awaiting cultures and/or treat pain while awaiting results

**If culture(s) positive treat accordingly**
- If symptoms persist and cultures negative treat empirically for yeast or if yeast found consider alternative anti-fungal medication
- If symptoms still persist consider treating empirically for Raynaud’s
- If symptoms are still unresolved re-examine and consider reculturing and consider adding fungal culture.

Do Not Interrupt Breastfeeding in Normal Healthy Premature or Term Infant

Weaning
Should not be recommended except in unusual circumstances—even then
Never abruptly—Always Gradually

If mother insists recommend resolving infection first and then gradually weaning

Abrupt Weaning Provokes Flu-like Symptoms, Increases Duration of Infection and the Risk of Abscess
Mastitis Research: Updates

Treatment
Etiology
2013 Cochrane Review of Mastitis TX
Only 2 Trials

1. No Difference: Between Conservative vs ATB Tx
   But small (n=25)

2. Found a Difference
   But problematic design

US Tx of Blocked Ducts

- $n=25$ and $n=34$ treatments (Some with 2-3 Episodes)
- $n=23$ with Symptom Resolution
- Of 34 Treatments 11 resolved within 1 day and 14 within 2 days

US sig: 100% (continuous frequency) duty cycle, 1 MHz, 2 W/cm$^2$, 8 to 10 min/2°—effective radiation area (2-in head size)

Journal of Chiropractic Medicine
(2012) 11, 170–178
Bacterial Profile of Mothers with Vasospasm vs. Infectious Mastitis

**Table 3** Detection of bacterial DNA in the milk samples by QRT-PCR. Data are expressed as \( \log_{10} \) genome equivalent ml\(^{-1}\) (Mean and SD)

<table>
<thead>
<tr>
<th>Sample</th>
<th>Total bacteria</th>
<th><em>Staphylococcus</em></th>
<th><em>Bifidobacterium</em></th>
<th><em>Bacteroides</em></th>
<th>Clostridium cluster XIVa</th>
<th>Enterococcus</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS1</td>
<td>2.84 (0.42)</td>
<td>2.70 (0.44)</td>
<td>Nd</td>
<td>Nd</td>
<td>Nd</td>
<td>2.37 (0.08)</td>
</tr>
<tr>
<td>RS2</td>
<td>2.86 (0.19)</td>
<td>2.65 (0.32)</td>
<td>Nd</td>
<td>Nd</td>
<td>Nd</td>
<td>2.68 (0.50)</td>
</tr>
<tr>
<td>RS3</td>
<td>2.74 (0.33)</td>
<td>2.60 (0.29)</td>
<td>Nd</td>
<td>2.13 (0.57)</td>
<td>Nd</td>
<td>2.75 (0.59)</td>
</tr>
<tr>
<td>RS4</td>
<td>2.79 (0.53)</td>
<td>2.57 (0.39)</td>
<td>Nd</td>
<td>Nd</td>
<td>Nd</td>
<td>2.06 (0.06)</td>
</tr>
<tr>
<td>RS5</td>
<td>2.80 (0.60)</td>
<td>2.73 (0.45)</td>
<td>Nd</td>
<td>Nd</td>
<td>2.06 (0.22)</td>
<td>2.49 (0.66)</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>2.81 (0.05)</td>
<td>2.65 (0.07)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>2.47 (0.27)</td>
</tr>
<tr>
<td>Prevalence</td>
<td>5/5</td>
<td>5/5</td>
<td>0/5</td>
<td>1/5</td>
<td>1/5</td>
<td>5/5</td>
</tr>
<tr>
<td>MS1</td>
<td>5.93 (0.87)</td>
<td>5.74 (0.29)</td>
<td>2.96 (1.02)</td>
<td>2.72 (0.80)</td>
<td>2.64 (0.89)</td>
<td>3.05 (0.45)</td>
</tr>
<tr>
<td>MS2</td>
<td>4.84 (0.90)</td>
<td>3.99 (0.15)</td>
<td>2.83 (0.56)</td>
<td>2.68 (0.87)</td>
<td>2.90 (0.34)</td>
<td>2.85 (0.24)</td>
</tr>
<tr>
<td>MS3</td>
<td>5.40 (1.02)</td>
<td>4.03 (0.43)</td>
<td>2.72 (0.45)</td>
<td>2.52 (0.76)</td>
<td>2.23 (0.49)</td>
<td>3.13 (0.46)</td>
</tr>
<tr>
<td>MS4</td>
<td>6.33 (1.22)</td>
<td>5.88 (0.66)</td>
<td>2.43 (0.64)</td>
<td>2.35 (0.34)</td>
<td>3.41 (0.90)</td>
<td>4.15 (0.54)</td>
</tr>
<tr>
<td>MS5</td>
<td>5.39 (1.00)</td>
<td>4.60 (0.65)</td>
<td>2.48 (0.36)</td>
<td>3.33 (0.35)</td>
<td>2.00 (0.54)</td>
<td>2.70 (0.44)</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>5.58 (0.57)</td>
<td>4.85 (0.91)</td>
<td>2.68 (0.23)</td>
<td>2.72 (0.37)</td>
<td>2.60 (0.59)</td>
<td>3.17 (0.57)</td>
</tr>
<tr>
<td>Prevalence</td>
<td>5/5</td>
<td>5/5</td>
<td>5/5</td>
<td>5/5</td>
<td>5/5</td>
<td>5/5</td>
</tr>
<tr>
<td>P</td>
<td>0.000</td>
<td>&lt;0.001</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.037</td>
</tr>
</tbody>
</table>

Nd, not detected
The study lasted 30 days and, during this period, the probiotic group (n = 10) daily consumed a capsule with 200 mg of a freeze-dried probiotic containing ~10 log10 CFU each of *L. salivarius* CECT5713 and *L. gasseri* CECT5714 in a matrix.

**FIG. 1.** Staphylococcal counts in the milk samples obtained from women of the control (A) and probiotic (B) groups at days 0 and 30. The black bars (and the associated number) indicate the mean of the values.
N=352 women with infectious mastitis were randomly assigned to 3 groups. Women in groups A (np124) and B (np127) ingested daily 9 log colony-forming units (CFU) of L. fermentum CECT5716 or L. salivarius CECT5713, respectively, for 3 weeks, whereas those in group C (np101) received the antibiotic therapy prescribed in their respective primary care centers.

Arroyo, R. Clinical Infectious Diseases 2010; 50(12):1551–1558
S. Epidermidis and Mastitis

(Red, Sore Breast, and Fever)

Mothers with mastitis were more likely to have the biofilms associated production gene

(11% Healthy Controls vs. 33% Mastitis)

## S. Epidermidis Strains Sensitivity*

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>MIC  ug mL</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrofurantoin</td>
<td>32</td>
<td>100%</td>
</tr>
<tr>
<td>Rifampin</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Trimethoprim/Sulfamethoxazole</td>
<td>&lt;2/38</td>
<td>90%</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>≤ 4</td>
<td>80%</td>
</tr>
<tr>
<td>Ciprofloxin</td>
<td>≤ 0.5</td>
<td>76%</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>≤ 8</td>
<td>75%</td>
</tr>
</tbody>
</table>

*S. Epidermidis is a Coagulase Negative Staphylococcus*
Biofilms: Are Slime

- Increases antibiotic resistance
- Increases false-negative culture rates
- Allows slow growth
- Known for causing Recurrent, Chronic, Low-grade Infections
  - Which often present without fever or other systemic symptoms
- Within Biofilms Candida albicans and staphylococci can be synergistic
- Traditionally Explored in Relationship to Medical Devices and Catheters


Figure 1. C. albicans presence in “white plaque” lesions formed on the tongue of mice with oropharyngeal candidiasis. C. albicans challenged mice were sacrificed after 5 days of oral exposure to the GFP-expressing strain MRL51. Panel A depicts the dorsal aspect of a tongue from an uninfected control. Panel B depicts the white plaque lesions formed on the tongue of an infected mouse. Panel C depicts a three dimensional reconstruction of a live biofilm as visualized via confocal microscopy.

# Eglash’s Chart Review of Subacute Cases

**Summary**

<table>
<thead>
<tr>
<th>History</th>
<th>Rate</th>
<th>Subjective symptoms</th>
<th>Rate</th>
<th>Objective Findings</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nipple Cracks and Sores</td>
<td>74%</td>
<td>Breast Pain with Deep touch</td>
<td>82%</td>
<td>Nipple Cracks, Blisters, Yellow Scabs</td>
<td>73%</td>
</tr>
<tr>
<td>Latch and suck problems</td>
<td>48%</td>
<td>Bilateral Pain</td>
<td>90%</td>
<td>Palpable Breast Tenderness</td>
<td>79%</td>
</tr>
<tr>
<td>Acute mastitis</td>
<td>52%</td>
<td>Burning Nipple Pain</td>
<td>68%</td>
<td>Palpable Tenderness Behind Areola</td>
<td>29%</td>
</tr>
<tr>
<td>Treatment of yeast</td>
<td>63%</td>
<td>Bruised Nipple Pain</td>
<td>49%</td>
<td>Positive Bacterial Cultures (n=60)</td>
<td>50%</td>
</tr>
</tbody>
</table>

### Eglash: Pain Relief and Duration of Antibiotic Use

<table>
<thead>
<tr>
<th>Duration of Use in Weeks</th>
<th>Patients</th>
<th>Pain Relief @ 2 Weeks</th>
<th>@ 4 Weeks</th>
<th>@ 6 Weeks</th>
<th>@ &gt;6 Weeks</th>
<th>No Pain Relief</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4</td>
<td>25</td>
<td>16%</td>
<td>68%</td>
<td>8%</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>5-6</td>
<td>21</td>
<td>0%</td>
<td>0%</td>
<td>81%</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>&gt;6</td>
<td>18</td>
<td>0%</td>
<td>5%</td>
<td>11%</td>
<td>78%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Average Duration was 5.7 Weeks
Candida

S. Aureus

Both or Either

Odds Ratios and Relative Risk Ratios for Microbes in the Milk, Nipple and Either Site

- **Yeast Milk**: OR (95%) CI = 11.79, RR (95%) CI = 8.45
- **S. aureus Milk**: OR (95%) CI = 7.29, RR (95%) CI = 7.66
- **Yeast and S. aureus Milk**: OR (95%) CI = 7.58, RR (95%) CI = 8.84
- **Yeast Either**: OR (95%) CI = 8.65, RR (95%) CI = 5.89
- **S. aureus Either**: OR (95%) CI = 4.71, RR (95%) CI = 3.77
- **Yeast Nipple**: OR (95%) CI = 6.48, RR (95%) CI = 3.96
- **S. aureus Nipple**: OR (95%) CI = 4.29, RR (95%) CI = 3.2
# Time-to-event analysis of predictors of first symptoms of case definition

<table>
<thead>
<tr>
<th>Events</th>
<th>Rate Ratio (95% CI)</th>
<th>P Value</th>
<th>Multivariate Rate Ratio (95%)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candida Positive</td>
<td>1.87 (1.10 to 3.16)</td>
<td>0.018</td>
<td>2.03 (1.19 to 3.45)</td>
<td>0.009</td>
</tr>
<tr>
<td>S. aureus Positive</td>
<td>1.53 (0.88 to 2.46)</td>
<td>0.128</td>
<td>1.41 (0.08 to 2.46)</td>
<td>0.234</td>
</tr>
<tr>
<td>Nipple Damage</td>
<td>2.3 (1.19 to 4.43)</td>
<td>0.012</td>
<td>2.39 (1.21 to 4.70)</td>
<td>0.012</td>
</tr>
</tbody>
</table>

A Case Control Study of Bacterial Species and Colony Count in Milk of Breastfeeding Women with Chronic Pain

**Table 2. Breastmilk and Nipple Culture Bacterial Species Growth**

<table>
<thead>
<tr>
<th>Bacterial species</th>
<th>Nipple culture cases</th>
<th>Breastmilk Cases (n=61)</th>
<th>Breastmilk Controls (n=53)</th>
<th>Breastmilk p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coagulase-negative Staphylococcus</td>
<td>50 (87%)</td>
<td>46 (75%)</td>
<td>42 (79%)</td>
<td>0.626</td>
</tr>
<tr>
<td>S. aureus</td>
<td>12 (21%)</td>
<td>12 (19.7%)</td>
<td>1 (1.9%)</td>
<td>0.003*</td>
</tr>
</tbody>
</table>

**Table 3. Median Bacterial Colony Count Growth in Breastmilk**

<table>
<thead>
<tr>
<th>Bacterial colony count</th>
<th>Controls CFU/mL [median (range)]</th>
<th>Cases CFU/mL [median (range)]</th>
<th>p value^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coagulase-negative Staphylococcus</td>
<td>5,000 (0–100,000)</td>
<td>900 (0–100,000)</td>
<td>0.003^b</td>
</tr>
<tr>
<td>S. aureus</td>
<td>0 (0–17,000)</td>
<td>0 (0–100,000)</td>
<td>0.000^b</td>
</tr>
</tbody>
</table>

Role of Oral Antibiotics in Treatment of Breastfeeding Women with Chronic Breast Pain Who Fail Conservative Therapy

**FIG. 2.** Pain in the conservative therapy (CTX) and oral antibiotic treatment (OTX) groups: (A) nipple and (B) breast.
Infectious Acute Mastitis vs. Subacute or Ductal Infection

(A) Acute mastitis by S. aureus

- Breast colonization
- Infection
- Inflammation
- Ingurgitation
- Toxin production
- Breast redness and pain
- Systemic symptoms (flu-like symptoms)
- Systemic alteration of the host immune system
- Absorption of toxins (general bloodstream)

(B) Subacute mastitis by CNS or viridans streptococci

- Breast colonization
- Infection
- Inflammation
- Ingurgitation
- No toxin production
- Thick biofilms
- Antibiotic resistance
- IgA proteases
- Molecular mimicry
- Widely undiagnosed
- No breast redness/systemic symptoms
- Tendency to chronic/recurrent mastitis
- Obstructions
- Reduced secretion
- Pain

Figure 2. Schematic representation of the etiopathogenesis of acute (A) and subacute (B) mastitis. CNS = coagulase-negative staphylococci; IgA = immunoglobulin A.
Cases
Dyad with Mastitis and Abscess

Chief Complaint

- Hx nipple scabs/fissures in-hospital
- Dx mastitis in ER tx with Dicloxacillin and told to wean
- Consulted her Provider and changed to Amoxicillan
- No improvement after 2 weeks
- Saw Another Provider changed back to Dicloxacillin and referred to surgery
- Referred by Surgery for US guided abscess removal
- No improvement on Dicloxacillin
Objective and Assessment

- Obvious mastitis with abscess
- Infant not gaining wgt

Plan and Course

- Switched to Clindamycin (Cleocin) x 10d
- Cultures (MRSA-infant unaffected)
- Improved on Cleocin w/in 48 hours
  (Rifampin added by Infectious Dis)
- 18cc drained w/ US
- On recheck infant with insufficient wgt gain (4 oz).
- Mom started on Metoclopramide (Reglan)
Recurrent Mastitis

Chief Complaint: 3d PP referred with body aches and nipple trauma

Objective and Assessment
- Fever 101.6°
- Bilateral Striped scabbing of nipples
- L-breast with flushed area @ 5-7 o’clock

Plan and Course
Day 3-7: In-office
- Latch corrected and treated without resolution w/
  1. Dicloxacillan (Diclox) 500mg QID x 10d
  2. Amoxicillin/potassium clavulanate (Augmentin) 875 mg BID

Day 7: Urgent care
- No improvement and now yellow oozing crusts
- Added sulfamethoxazole-trimethoprim (Bactrim DS)
- 5 day course of fluconazole (Diflucan)
- Nipples: topical clotrimazole (Gynelotrimin) and mupricin (Bactroban)
- Cultures performed but were irretrievable
Plan and Course

5-11 weeks: 3 L-BREAST MASTITIS

- 1 resolved w/out antibiotics
- 1 w/ Bactrim DS x 15 d
- 3rd relapsed with fever: on own mother resumed Bactrim DS
  1. Breast US ordered
  2. Milk and infant ordered oronasopharynx cultures ordered (negative)
  3. Tx: Continue Bactrim DS BID x 21d

17-25 weeks: 3 R-BREAST MASTITIS

- Weaned to bid nursing (on own)
- Resume Bactrim DS BID x 14d then QD (Relapsed 3x at the QD dose)
- Herbal Tx “phytolocca” (ineffective)
- 3rd relapse on Bactrim DS QD w/ fever
  1. TSH and CBC ordered
  2. Infant cultures (heavy growth of yeast and normal flora)
  3. Mother and child treated with Bactroban nasally
  4. Offered continuous treatment with Bactrim DS (declined)
  5. Weaned at 8 months
  6. No infections with a subsequent child
Chief Complaint

- 1m old Infant hospitalized with:
  - Reflux of Bloody milk and Melanocytic Stooling
- Maternal Hx
  - Eczema
  - Burning breast pain for 2 weeks worsening
  - Told to pump and bottle-feed

Objective and Assessment

- Nipple fissures/scabs (honey crusted)
- Infant w/o signs of candida/thrush
- Infant tests positive for maternal blood

Plan and Course

1. Cultures of milk and the nipple/areola
2. Bactrim DS (Sulfamethoxazole-trimethoprim) BID x 14d
3. Resume direct breastfeeding if desired
Cultures: C. albicans, S. aureus and Enterococcus.

Add: Fluconazole (Diflucan) 200mg: 2 tabs po day 1 then daily until symptoms resolved for 7 days #25 1 refill
Topical yeast cream
Continue Bactrim DS

Burning Breast Pain For 7 Months
Chief Complaint

- Currently 7m postpartum
- Tx early PP for mastitis by her Provider
- Developed burning breast pain
- Retreated w/ cephalexin (Keflex)
  - Pain worsened
  - Told she pulled a muscle or was engorged

Objective and Assessment

- Nipple with yellow blisters or blebs?
- Very sore red slightly shiny
- Breast normal appearing
- Infant: no yeast
- Dx Candidiasis Breast r/o Bacterial Infection
Plan and Course

- Culture of Milk and Nipple
- Diflucan 200 mg 2 po today then 1 QD until symptoms resolved 100% x 7d
- Nipples: OTC antifungal Post-feeding
- W/in 1 w 80% better but Plateaued
- Cultures (Scant Growth S. aureus and S. epidermidis)
- Both Resistant and S. epidermidis resistant to all oral meds except Levaquin.
- Levofloxacin initiated for 2 wks w/ resolution

Healed Nipple
Chief Complaint

- Bilateral burning breast pain
- Nipples: fiery pink, sore, breakdown, scabs sensitive to touch
- Self treated with clotrimazole (Gynelotrimin) (poor response)
- Prior treatment by Provider: Diflucan (fluconazole) for mother
  - Gentian Violet for infant
- Improved but not resolved at 4w

Objective:

- Nipples
  - Very sensitive to touch
  - occasionally blanched after a feeding
  - scabs had resolved but still a little pinker than normal
- Breasts normal by inspection
Plan and Course

Cultures
Start mupricin (Bactroban)

3 Days Later Follow Up Phone Call:

• 95% improved on Bactroban
• Nipples were much less sensitive.
• Cultures-Coagulase negative staphylococcus (Moderate growth)
• Sensitivities- Multiple Resistance
• Continue on the Bactroban
• Diflucan 200mg refilled for 7 days with 1 more refill

The next day @ her 6 week postpartum check

• Pain Re-exacerbated: even though 1 day before it had improved
• Tx: Sulfamethoxazole-trimethoprim (Bactrim DS) 1 bid x 14d 1 RF
• Improvement within a Few Days with gradual resolution
Infant deaths and infant mortality rates for the 10 leading causes of infant death: United States, preliminary 2010

Data are based on a continuous file of records received from the states. Rates are per 100,000 live births. Figures are based on weighted data rounded to the nearest individual, so categories may not add to totals or subtotals.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of death (Based on the International Classification of Diseases, Tenth Revision, Second Edition, 2004)</th>
<th>Number</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)</td>
<td>5,077</td>
<td>126.9</td>
</tr>
<tr>
<td>2</td>
<td>Disorders related to short gestation and low birthweight, not elsewhere classified (P07)</td>
<td>4,130</td>
<td>103.2</td>
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<tr>
<td>3</td>
<td>Sudden infant death syndrome (R95)</td>
<td>1,890</td>
<td>47.2</td>
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<tr>
<td>4</td>
<td>Newborn affected by maternal complications of pregnancy (P01)</td>
<td>1,555</td>
<td>38.9</td>
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<tr>
<td>5</td>
<td>Accidents (unintentional injuries) (V01-X59)</td>
<td>1,043</td>
<td>26.1</td>
</tr>
<tr>
<td>6</td>
<td>Newborn affected by complications of placenta, cord and membranes (P02)</td>
<td>1,030</td>
<td>25.7</td>
</tr>
<tr>
<td>7</td>
<td><strong>Formula Feeding</strong> (2004)</td>
<td><strong>721</strong></td>
<td><strong>18?</strong></td>
</tr>
<tr>
<td>8</td>
<td>Bacterial sepsis of newborn (P36)</td>
<td>569</td>
<td>14.2</td>
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<td>9</td>
<td>Diseases of the circulatory system (I00-I99)</td>
<td>499</td>
<td>12.5</td>
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<tr>
<td>10</td>
<td>Respiratory distress of newborn (P22)</td>
<td>496</td>
<td>12.4</td>
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<tr>
<td>11</td>
<td>Necrotizing enterocolitis of newborn (P77)</td>
<td>470</td>
<td>11.7</td>
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Any Questions???